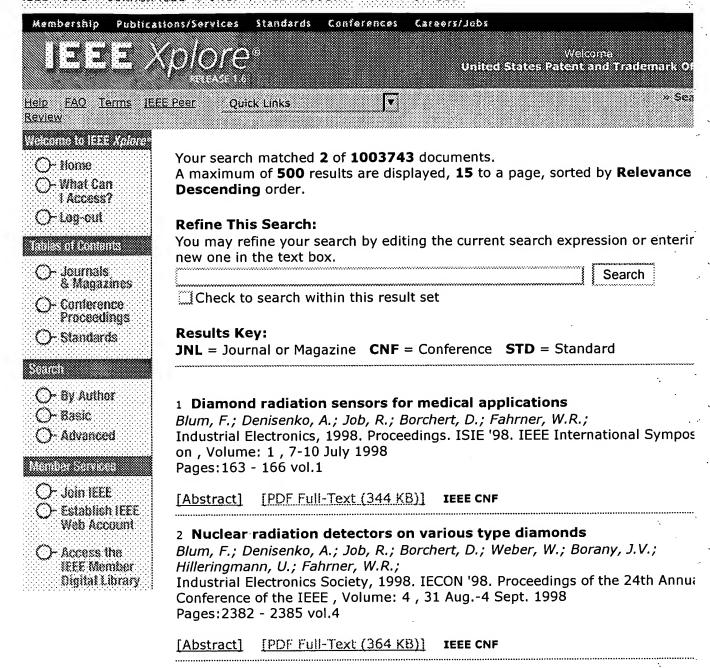
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4	IS&R	L4	0	("jp-4240784").PN.	USPAT; EPO; JPO; DERWEN T; IBM_TD B	2004/02/13 09:43
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3	BRS	L3	1616	1 and (light adj emitt\$4)	USPAT; EPO; JPO; DERWEN T; IBM_TD B	2004/02/13 06:59
4	BRS	L4	1216	1 and (light adj (emitter emitting))	USPAT; EPO; JPO; DERWEN T; IBM_TD B	2004/02/13 06:59
5	BRS	L5	280	4 and (257/\$.ccls. 372/\$.ccls.)	USPAT; EPO; JPO; DERWEN T; IBM_TD B	2004/02/13 07:00
6	BRS	L6	8	diamond and (free adj exciton)	USPAT; EPO; JPO; DERWEN T; IBM_TD	07:01



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Title: Efficient free-exciton recombination emission from diamond diode at room temperature

Author(s): Horiuchi K (REPRINT) ; Kawamura A; Ide T; Ishikura T; Takamura K ; Yamashita S

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Abstract: Free-exciton recombination emission of 235 nm in wavelength is obtained by current injection at room temperature from a diamond -based pn junction diode composed of B-doped crystal grown by high-temperature, high-pressure synthesis and a S-doped homoepitaxial layer grown by the chemical vapor deposition method. The diode shows a clear rectification characteristic and a high external quantum efficiency of excitonic emission, 8 x 10(-5), which indicates that the excitonic emission of diamond is a good candidate for application to semiconductor UV-light-emitting devices. A defect-induced light emission and large leakage current indicate that a higher UV emission efficiency is expected with improvement of the junction quality.

Descriptors--Author Keywords: diamond; UV; light-emitting diode; free exciton; electroluminescence; sulfur-doping; n-type conductivity Identifiers--KeyWord Plus(R): CHEMICAL-VAPOR-DEPOSITION; THIN-FILM; ELECTROLUMINESCENCE; SULFUR

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